

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES PATENT APPLICATION

FOR

A GUN TRIGGER ACTUATOR

OF

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BACKGROUND OF THE INVENTION

(a) Field of the Invention

[0001] The present invention relates to a gun trigger actuator which converts a manual trigger to an optionally mechanical trigger in lever action rifles. More particularly, the present invention relates to a fulcrum which is pivotably mounted on a pivot pin to the trigger guard portion of the rifle lever just below and forwardly of the tip of the trigger. The fulcrum pivots on the trigger guard from a passive off position to an active firing position and can optionally be employed to mechanically fire the gun by exerting force on the trigger, thereby actuating the trigger, when the lever is rotated to a closed position. The present invention may also include a trigger shim which is installed in the receiver in front of the trigger to eliminate slack in the trigger and properly fix the trigger in position in relation to the fulcrum and may also include an enlarged finger opening in the lever for accepting a user's wrist or arm.

(b) Description of the Prior Art

[0002] U.S. Patent No. 2,920,413 to Marhefka et al. teaches an "Arctic trigger" comprised in part of a pair of clamp locks adapted to be fitted about a trigger, a clip slide to provide an extension to the trigger consisting in part of a pair of elongated members which are rigidly connected by a rod. The clamp locks are attached to an operating bar, which substantially simulates the contour of the trigger guard. A flat spring is positioned between the trigger guard and the operating bar. To fire the gun, the operator grasps the stock and bar with one hand and squeezes, whereby the trigger is moved rearwardly to fire the gun.

[0003] U.S. Patent No. 1,837,093 to Andrews teaches a gun trigger actuating device comprising a bell crank lever mounted on the stock of the gun, one arm of the lever extending

downwardly to a point below the trigger guard of the gun, a lever mounted on the bell crank lever and extended upwardly to engage the lower end of the trigger of the gun, and the opposite end of the bell crank lever adapted to be forced downwardly to operate the lever and trigger.

[0004] U.S. Patent No. 1,513,654 to Thompson teaches a spring-actuated plunger slidably mounted in a bar or hollow barrel, which is secured within the trigger guard. When the plunger is released, the plunger strikes the trigger with sufficient impact to discharge the firearm.

[0005] U.S. Patent No. 477,764 to Mercer teaches a self-acting, breech-loading, and hammerless gun. An oscillating hand-lever is connected to a link, which is connected to a movable block which forms both an abutment and a cartridge extracting and loading device. By pushing the hand-hold *e'* of lever E down and forward, the block is retracted and the firing-pin or hammer cocked. A cartridge can then be inserted by hand into the breech of the barrel and the lever E retracted, throwing the block forward, causing the block to firmly hold the cartridge in place and to act as the abutment for receiving the shock of the explosion. Lever E may have a cam *E*⁴ formed on it in such a position that it will engage the trigger and release the firing pin just after the block has reached the limit of its forward movement and been locked with the cartridge in the barrel.

[0006] U.S. Patent No. 181,855 to Leonard teaches a trigger having a set-screw in the finger-lever of a rifle, in such a position as to engage with the back of the trigger and push the trigger forward, setting the set-trigger, when the finger-lever is moved up or down.

[0007] The television series “The Rifleman” made known a lever action rifle with a fixed screw incorporated into the trigger guard which tripped the trigger every time the lever was closed, thus firing the gun.

SUMMARY OF THE INVENTION

[0008] The present invention relates to a gun trigger actuator for activating a trigger to fire a rifle and converts a manual trigger to an optionally mechanical trigger in lever action rifles, such as the Winchester Model 94 lever action rifle. While the invention can be modified to fit a multitude of different rifles, this invention is described herein for use with post 1990 manufactured Winchester Model 94 lever action rifles in the calibers of .38, .357, .44 Magnum, and .45 Long Colt and any versions of the low pressure low velocity calibers introduced for the Model 94 lever action rifle. The invention may also be used with rifles employed for target practice and marksmanship competitions.

[0009] In the field of lever action and rapid fire rifles, the typical lever action rifle will fire a single round when the trigger is squeezed if there is one round in the chamber and the hammer is cocked. If the magazine contains one or more cartridges, another round may be chambered after a cartridge is fired by rotating the lever down through a short arc until the lever is fully forward, which extracts and ejects the empty cartridge case from the chamber, cocks the hammer and chambers a fresh round. The closing of the lever, which positions the lever parallel to the grip stock, will transfer a new cartridge from the magazine to the chamber, leaving the hammer in a cocked ready to fire position. The user must then manually pull the trigger to fire the rifle. This sequence of operation may be followed until both the magazine and chamber are empty. Handicapped users and users having a temporary or permanent impairment of their fingers or hands often have difficulty firing a standard lever action rifle due to difficulty working the trigger and sometimes difficulty working the standard sized finger opening portion of the rifle lever.

[0010] In a rifle having the gun trigger actuator of the present invention, the rifle may optionally be fired by closing the lever rather than manually pulling the trigger. To accomplish this, a fulcrum is pivoted into its active firing position so that the trigger is actuated and the rifle fires when the lever is closed. Firing of a lever action rifle by handicapped users and users having a temporary or permanent impairment of their fingers or hands has often presented problems due to difficulty working the trigger and sometimes also difficulty working the standard sized finger opening portion of the rifle lever. This invention provides a convenient, fast and simple apparatus for firing a rifle by actuating the trigger by closing the rifle lever. The invention may also include an enlarged finger opening in the lever in order to accept a user's wrist or arm. These improvements allow the rifle to be fired by a person with less than full use of their fingers or hands.

[0011] The gun trigger actuator of the present invention comprises a fulcrum which is rotatably mounted to a rifle lever, a pivot pin for mounting the fulcrum and which acts as a pivot point for the fulcrum, and a shim positioned in the receiver directly in front of the trigger to reduce slack in the trigger and hold the trigger in a more rearward position when at rest. The fulcrum is rotatably mounted to the inside of the lever's trigger guard at a pivot point adjacent to and forward of the bottom end of the trigger. The fulcrum rotates on a pin and may be placed in an active firing position or an passive off position. When in the active firing position, the fulcrum is rotated upward and forward of the trigger. The fulcrum exerts pressure on the trigger front face when the lever is closed, pushing the trigger rearward, actuating the trigger and thereby firing the rifle. When the fulcrum is in the active firing position, the rifle can be rapidly fired with the rifle positioned at the user's shoulder, body mid-section or hip by repeatedly opening

and closing the lever. The rifle can also be fired by cocking the rifle and just squeezing the lever with the palm of the hand or part of a limb.

[0012] The fulcrum may be rotated downward and rearward to its passive off position flush against the trigger guard, so that the fulcrum makes no contact with the trigger when the lever is closed. This off position allows the user to use the rifle lever to chamber another round and then close the lever without firing the rifle. Additionally, when the fulcrum is in the passive off position, the trigger can be used manually and there is ample space for the user to insert a finger in front of the trigger for manual operation. The rifle remains in its manual mode until such time as the user rotates the fulcrum from the passive off position to the active firing position.

[0013] The present invention provides distinct advantages over the prior art structures, in that it allows a rifle to optionally be fired singly, or to be fired in a rapid fire method by the closing and opening of the lever alone which does not require manually pulling the trigger. The mechanical firing feature is optional and may be turned off by simply rotating the fulcrum into its passive position.

[0014] An additional advantage is that the fulcrum may be mounted to a standard factory rifle lever and the shim is installed in an existing space in the receiver in front of the trigger. All parts of the present invention are inexpensive, easily installed, and easy to use, and the invention can be easily removed and the rifle easily converted back to its original factory form.

[0015] An additional advantage is that the trigger actuation by the present invention requires indirect mechanical force on the trigger rather than direct force to be exerted manually on the trigger to push or pull the trigger directly rearward. In order to pull the trigger of a rifle, exertion on the trigger of a force of three to five pounds is generally required. When the force required to

pull the trigger is less than approximately two and one half pounds, the gun may become very dangerous. The present invention does not alter or modify the manufacturer's trigger pull requirements. Instead, the fulcrum translates the rotational motion of the lever into mechanical rearward pressure against the trigger, allowing for the utilization of the lever itself to exert the force needed to fire the rifle without requiring the user to manually pull the trigger.

[0016] The present invention was designed for use by marksmen, sportsmen, Cowboy Action enthusiasts, users wearing mittens, partial amputees or other physically impaired people. An additional advantage of the invention is that the invention improves the ability of users having temporary or permanent impairments to their fingers or hands to fire a lever action rifle by eliminating the need to manually pull the trigger. The invention may also include an enlarged finger opening in the lever in order to accept a user's wrist or arm, allowing the rifle to be fired by a person with limited or no use of their fingers or hands.

[0017] An additional advantage of the invention is that the installed trigger shim eliminates slack in the trigger and holds the trigger in its most stationary position, which reduces the possibility of injury to the shooter, trigger over travel and premature tripping of the hammer.

[0018] Even more particularly, the preferred embodiment of the gun trigger actuator of the present invention for a lever action rifle having a trigger having a trigger bottom end a lever having a trigger guard and a finger portion, and a receiver, comprises: a fulcrum having a front end, a back end, a top face, a bottom face, a left side, at least one aperture toward the front end, the at least one aperture comprising a first aperture and a second aperture, the first aperture located on the fulcrum left side, the second aperture located on the fulcrum right side, and at least one tab extending outwardly at an angle towards the fulcrum back end; at least one pivot pin,

where the at least one pivot pin extends completely through the lever through the trigger guard portion of the lever and is received by the first aperture and the second aperture and rotatably secures the fulcrum to the trigger guard portion; a trigger shim, where the trigger shim is installed in the rifle receiver immediately adjacent and forward of the trigger; where the fulcrum is shaped to allow rotation of the fulcrum on the trigger guard and the fulcrum is rotatable between a trigger engaging position and a passive position; where the fulcrum has a longitudinal slot in the top face, the longitudinal slot extending towards the front end and the back end and the longitudinal slot is sized to allow the trigger bottom end to easily travel through the longitudinal slot when rearward pressure is applied to the trigger; where the trigger bottom end is spaced above the fulcrum and travels over the fulcrum when rearward pressure is applied to the trigger; where the trigger shim minimizes unnecessary forward movement of the trigger and holds the trigger in a rearward position; where the fulcrum is mounted on the trigger guard below the trigger bottom end in a passive position, the front end rotatably secured by the pivot pin forward of the trigger bottom end, and the back end extending rearwardly along and above the trigger guard; where when the fulcrum is in the passive position, the rifle may be fired by manually applying rearward pressure to the trigger; where the fulcrum rotates on the pivot pin to an active position where the fulcrum back end extends upward at an angle forward of the trigger bottom end; where when the fulcrum is in the active position and the lever is in a closed position, the bottom face is in contact with the trigger and the fulcrum exerts rearward pressure on the trigger; where when the fulcrum is in the active position, the rearward pressure on the trigger exerted by the fulcrum causes the rifle to fire; and where when the fulcrum is in the active position, the rifle may be fired by closing the lever.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] A better understanding of the present invention will be had upon reference to the following description in conjunction with the accompanying drawings, wherein:

[0020] Figure 1 is a right side view of a prior art Winchester lever action rifle;

[0021] Figure 2 is a partial side view of a receiver, trigger and rifle lever having the gun trigger actuator of the present invention installed, where a shim is installed in the receiver in front of the trigger and a fulcrum is installed on the trigger guard portion of the rifle lever at a point below and slightly forward of the trigger, the fulcrum being in the passive off position;

[0022] Figure 3 is a perspective view of the fulcrum of the present invention;

[0023] Figure 4 is a top view of an alternate embodiment of the fulcrum of Figure 3, having two tabs;

[0024] Figure 5 is the back end view of the fulcrum of Figure 4, having a curved bottom face;

[0025] Figure 6 is a perspective view of the trigger shim of the present invention;

[0026] Figure 7 is a left side view of a prior art standard factory hammer and trigger mechanism which does not have the trigger shim of the present invention installed;

[0027] Figure 8 is a left side view of the hammer and trigger mechanism of Figure 7 with the trigger shim of the present invention installed;

[0028] Figure 9 is a comparison left side view of the hammer and trigger mechanism of Figure 7 showing trigger placement difference due to trigger shim installation;

[0029] Figure 10 is a partial side view of the gun trigger actuator of Figure 2, with the lever in the forward open position and the fulcrum rotated into the active firing position;

[0030] Figure 11 is a partial side view of the gun trigger actuator of Figure 2, with the lever in the closed position, the fulcrum in the active firing position, and the trigger pushed back by the fulcrum;

[0031] Figure 12 is a partial side view of a receiver, trigger and rifle lever having an alternate embodiment of the gun trigger actuator of the present invention installed, where no shim is installed in the receiver and a fulcrum is installed on the trigger guard portion of the rifle lever at a point below and slightly forward of the trigger, the fulcrum being in the passive off position;

[0032] Figure 13 is a partial side view of the gun trigger actuator of Figure 2, where the lever has an enlarged finger hole which is sized to accept the limb of an adult person; and

[0033] Figure 14 is a partial side view of the gun trigger actuator of Figure 12, where the lever has an enlarged finger hole which is sized to accept the limb of an adult person.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0034] With reference to the Figures, Figure 1 shows a prior art Winchester lever action rifle 1, having a barrel 2, a stock 4, a receiver 6, a trigger 8, a lever 10 having a trigger guard 12 towards the lever 10 front end and a finger lever 18 comprising the back portion of the lever 10, a hammer 20, a magazine 22, and an ejection port 24. When a live cartridge is in the chamber, the rifle 1 may be fired by cocking the hammer 20 and manually pulling or exerting rearward pressure on the trigger 8. If the magazine 22 contains one or more cartridges, another cartridge may be chambered after a cartridge is fired by rotating the lever 10 down through a short arc until the lever 10 is fully forward or open. This action of the lever 10 extracts the empty cartridge case from the chamber and ejects the empty cartridge through the ejection port 24, cocks the hammer

20 and chambers a fresh cartridge. Closing the lever 10, which positions the lever 10 close to and generally parallel with the stock 4, will transfer a new cartridge from the magazine 22 to the chamber, while leaving the hammer 20 in a cocked ready to fire position. The user must then manually pull or exert rearward pressure on the trigger 8 to fire the rifle 1. This sequence of operation may be followed until both the magazine 22 and chamber are empty.

[0035] Figure 2 shows the preferred embodiment of the gun trigger actuator 130 of the present invention installed on a lever action rifle 101 such as the prior art Winchester lever action rifle 1 of Figure 1, or other similar rifle. The gun trigger actuator 130 is comprised of a trigger shim 140 installed in the receiver 106, a fulcrum 150 and a pivot pin 180 which secures the fulcrum 150 to the lever 110 and acts as a pivot point for the fulcrum 150.

[0036] As shown in Figure 2, the fulcrum 150 has at least one aperture 164, 166 for accepting a pivot pin 180, and preferably has two such apertures comprising a left aperture 164 and right aperture 166 (Figure 3). The fulcrum 150 is pivotably secured by the pivot pin 180 to the trigger guard 112 portion of the lever 110. A hole for insertion of the pivot pin 180 and mounting of the fulcrum 150 may be drilled or tapped in or through the trigger guard 112. The pivot pin 180 is inserted through at least one of said apertures 164, 166 and secured at least partially through the trigger guard 112 portion of the lever 110 at a position on the lever 110 just below and forward of the bottom end 111 of the trigger 108. If the pivot pin 180 does not extend completely through said trigger guard 112, then both of said apertures 164, 166 are required for pivotably securing the fulcrum 150 to the trigger guard 112, with a pivot pin 180 inserted through each aperture 164, 166 and into opposed sides of the trigger guard 112. In the preferred embodiment (Figures 2, 10 and 11), the pivot pin 180 extends completely through the trigger

guard 112 and both apertures 164, 166 are employed to secure the fulcrum 150 to the trigger guard 112. Figures 2, 10 and 11 also depicts the stock 4, finger lever 18, hammer 20 and standard hammer spring 22 of the lever action rifle 1, 101 which acts to return hammer 20 to its initial resting position.

[0037] The fulcrum 150 is preferably made out of low carbon ductile metal, but may be made of any suitable metal or plastic material. The pivot pin 180 may consist of at least one of a suitable variety of rivets, staid pins, bolts or screws, possibly used in combination with at least one nut, wing nut, lock washer, or cap as needed. Preferably, the pivot pin 180 selected for use will allow for adjustment of the tension of the fulcrum 150 to allow regulation of the ease of rotating the fulcrum in and out of its active firing position. Depending upon the pivot pin 180 chosen for attachment, it is possible that tension may be set and reset by the use of thumbscrew heads, allen wrenches or screw drivers.

[0038] As best shown in Figure 3, the preferred embodiment of the fulcrum 150 has a front end 152; a back end 154; a top face 156; a bottom face 158; a left side 160; a right side 162 (see Figures 4 and 5); a left aperture 164 for accepting a pivot pin 180 located on said left side 160 towards said front end 152; and a right aperture 166 for accepting a pivot pin 180 located on said right side 162 towards said front end 152. The fulcrum 150 also preferably has a recessed area 168 in the upper portion of the front end 152 to allow the fulcrum 150 to pivot easily about a pivot pin 180. The fulcrum 150 preferably also has a longitudinal slot 170 located in said top face 156, which extends through said fulcrum top face 156 to said bottom face 158. The longitudinal slot 170 extends towards said fulcrum front end 152 and towards said fulcrum back end 154 and is preferably sized to allow the bottom end 111 (Figures 2, 10 and 11) of the trigger

108 to travel through the longitudinal slot 170 without modification of the trigger 108 and without engaging the fulcrum 150 when the fulcrum is positioned in the passive off position (as best shown in Figure 2).

[0039] However, a longitudinal slot 170 is not required if adequate space exists between the trigger bottom end 111 and the fulcrum 150 to allow the trigger bottom end 111 to avoid engagement of the fulcrum 150 as it travels over the fulcrum 150 when the fulcrum 150 is positioned in the passive off position. In order to ensure adequate space exists, it is permissible to modify the lever 110 by enlarging the trigger guard 112 and spacing the trigger guard farther away from the trigger 108, to shorten the trigger 108, or both. The fulcrum 150 may be shaped in any shape which allows for mounting on the trigger guard 112 (Figures 2-6, and 10-12), rotation of the fulcrum 150, positioning of the fulcrum 150 in the passive off and active firing positions, and engagement of the fulcrum 150 with the trigger 108 when the fulcrum 150 is in the active firing position and the lever 110 is placed in the closed position. For instance, the fulcrum 150 may be shaped such that, if the fulcrum top face 156 has a curved shape which closely approximates the curved arc of the trigger guard 112, then longitudinal slot 170 would not be required. The fulcrum 150 preferably also has a left tab 172 extending outwardly at an angle from the lower portion of said left side 160 at said fulcrum back end 154.

[0040] Figure 4 shows a top view of fulcrum 250, of an alternate embodiment of the fulcrum 150 of Figure 3. Fulcrum 250 has a top face 156, front end 152, back end 254, recessed area 168, longitudinal slot 170 located on said top face 156 and extending completely through said fulcrum top face 156, a left side 160, a left tab 172, a right side 262, a and right tab 274.

[0041] The left tab 172 and right tab 274 of fulcrum 250 extend outwardly at an angle from the lower portion of said left side 160 and said right side 262, respectively, at said fulcrum back end 254. The fulcrum 150, 250 may have only a left tab 172 as shown in Figure 3, both a left tab 172 and a right tab 274 (Figure 4), or only a right tab 274 extending outwardly at an angle from the lower portion of said fulcrum right side 262 at said fulcrum back end 254. Alternatively, the fulcrum 150, 250 may have no tab. The tabs 172, 274 assist the user in rotating the fulcrum 150, 250 from a passive off position to an active firing position by providing the user with a surface on which to put pressure to rotate the fulcrum 150, 250 upward. The tabs 172, 274 preferably extend outward at a sixty degree angle from said fulcrum sides 160, 262, although any angle which assists the user in rotating the fulcrum 150, 250 may be used. Additionally, one or both of tabs 172, 274 may be placed in any position which will assist the user to rotate the fulcrum 150, 250 which do not interfere with travel of the trigger 108 or movement of the lever 110. The selection of a left tab 172 and/or a right tab 274 for use may be influenced by the desire to facilitate use of the present invention by a left handed or a right handed shooter.

[0042] Figure 5 is a back end view of the fulcrum 250 of Figure 4, showing the back end 254, a top face 156, a curved bottom face 258, left side 160, left tab 172, right side 262 and right tab 274. The curved bottom face 258 shown is an alternate shape than the flat bottom face 158 of Figure 3 and may better accommodate the shape of various shaped trigger guards 112.

[0043] Figure 6 shows the trigger shim 140. The shim 140 may be machined or stamped to a shape, preferably rectangular, which will fit securely into a space in the receiver 6 directly in front of the trigger 108. The trigger shim 140 is preferably made of low carbon ductile metal, but may be made from any suitable metal or plastic. As depicted in Figures 2, 10 and 12, the trigger

shim 140, where required for proper functioning of the invention, may be installed in an existing space in the receiver 6, 106 immediately forward of and adjacent to the trigger assembly 109 without modification to the trigger 108 or trigger assembly. Figures 13 and 14 depict the invention installed on the rifle 101 which does not require a trigger shim 140 for proper positioning of the trigger 108.

[0044] Figure 7 shows a left side view of a prior art standard factory hammer 20, hammer spring 26, trigger 8 mechanism, and receiver 6 for a lever action rifle 1. Figure 8 shows a left side view of a prior art standard factory hammer 20, hammer spring 26, trigger 108 mechanism and receiver 106 for a lever action rifle 101 in which the trigger shim 140 of the present invention has been installed in the receiver 106 in an existing space in the receiver 106 directly in front of the trigger 108. The trigger shim 140 is used when there is existing slack in the trigger 108. Placement of the trigger shim 140 in front of the trigger 108 reduces existing slack in the trigger 108. The trigger shim 140 minimizes unnecessary forward movement of the trigger 108 and holds the trigger 108 in a position rearward of its most forward position when the shim 140 is not present. This trigger shim 140 placement also properly fixes the trigger 108 in relation to the fulcrum 150 in the position required for proper functioning of the gun trigger actuator 130 of the present invention; however, such trigger shim 140 placement does not interfere with full functionality of said trigger 108.

[0045] Figure 9 is a comparison left side view of the hammer 20 and trigger 8, 108 mechanism of Figures 7 and 8 comparing placement of the trigger 8, 108 before and after installation of the trigger shim 140 in the receiver 6, 106. As clearly shown in Figure 9, when the

trigger shim 140 is positioned in the receiver 106 the trigger 108 is held in a position rearward of its customary position.

[0046] Figures 2, 10 and 11 demonstrate the preferred embodiment of the gun trigger actuator 130 of the present invention installed on a lever action rifle 101. The shim 140 is positioned in the receiver 106 directly in front of the trigger 108 to reduce slack in the trigger 108 and holds the trigger 108 in a position rearward of its most forward position when the shim 140 is not present. The fulcrum 150 is affixed to the inside of the trigger guard 112 and is mounted over a portion of the trigger guard 112 at a position just below the bottom end 111 of the trigger 108, with the front end 152 of the fulcrum 150 pivotably installed below and forward of the trigger bottom end 111. The fulcrum 150 rotates on a pivot pin 180 into a passive off position (Figure 2), where the fulcrum back end 154 is rotated back and extending rearwardly along and above said trigger guard 112 with the fulcrum 150 parallel to and in contact with the trigger guard 112 along the fulcrum 150 left side 160 and right side 262. The fulcrum 150 also rotates into an active firing position, where the fulcrum 150 is rotated forward with the fulcrum 150 at an angle to the trigger guard 112 and the fulcrum 150 back end 154 rotated upward at an angle forward of the trigger bottom end 111 (Figures 10 and 11). In the embodiment of Figures 2, 10 and 11, the fulcrum 150 has a longitudinal slot 170 (see Figure 4) to allow passage of the bottom end 111 of the trigger 108 past the fulcrum 150 and through the longitudinal slot 170 when the fulcrum 150 is in the passive off position, without modification of the trigger 108 or trigger bottom end 111 (see Figure 2).

[0047] Figure 2 shows the lever 110 in closed position and the fulcrum rotated into the passive off position, with the fulcrum 150 back end 154 rotated back with the fulcrum 150 above,

parallel to and in contact with the trigger guard 112 along the fulcrum 150 left side 160 and right side 162. With the fulcrum 150 in this passive position, the rifle 101 can be manually fired by the user by pulling back on or exerting rearward force on the trigger front face 109 until the hammer 20 is tripped and the rifle 101 fires.

[0048] Figure 10 shows the lever 110 rotated forward into an open position and the fulcrum 150 rotated into the active firing position. The fulcrum 150 is rotated upward at an angle to the trigger guard 112 and the fulcrum 150 back end 154 is forward of the trigger 108. The fulcrum bottom face 158 (see Figure 3) is in contact with the front face 109 of the trigger 108, with the fulcrum 150 left side 160 and right side 162 (see Figure 3) aligned on opposing sides of the trigger 108.

[0049] Figure 11 shows the lever 110 rotated back into a closed position and the fulcrum 150 still positioned in the active firing position shown in Figure 10. The fulcrum 150 is rotated forward at an angle to the trigger guard 112 and the fulcrum 150 back end 154 is forward of and embracing the trigger 108. The fulcrum bottom face 158 (also see Figure 3) is in contact with the front face 109 of the trigger 108, with the fulcrum 150 left side 160 and right side 162 aligned on opposing sides of the trigger 108. The closing of the lever 110 from the open position of Figure 10 forces the fulcrum back end 154 and bottom face 158 to exert rearward pressure against the trigger front face 109, pushing the trigger 108 rearward, thereby actuating the trigger 108, tripping the hammer 20 and causing the rifle 101 to mechanically fire. The fulcrum 150 in the active firing position translates the rotational motion of the lever 110 into mechanical rearward pressure against the trigger 108, allowing for the utilization of the lever 110 itself to exert the

force needed to mechanically fire the rifle 101 without requiring the user to manually pull the trigger 108.

[0050] If the fulcrum 150 is left in the forward rotated position as shown in Figures 10 and 11, the rifle 101 may be mechanically fired again by rotating the lever 110 down and fully forward, thereby extracting and ejecting the empty cartridge case from the chamber, cocking the hammer 20 and chambering a fresh round, and then closing the lever 110, thereby transferring a new cartridge from the magazine 22 to the chamber and actuating the trigger 108, which fires the rifle 101. This sequence of operation may be followed until both the magazine 22 and chamber are empty.

[0051] As shown in Figures 10 and 11, the fulcrum 150 is rotated upward and forward of the trigger 108 when in the active firing position. The fulcrum 150 exerts pressure on the trigger front face when the lever 110 is closed, pushing the trigger 108 rearward, actuating the trigger 108 and thereby firing the rifle. As shown in Figure 3, fulcrum back end 154 is preferably shaped to embrace the front face of the trigger 108 when fulcrum 150 is positioned in the active firing position and may have a curved portion towards the center of back end 154 for embracing the trigger 108. Such a fulcrum shape provides stability and limits sideways motion when pressure is placed by the actively positioned fulcrum 150 on the trigger 108 as lever 110 is closed, pushing the trigger 108 rearward and actuating the trigger 108.

[0052] If the rifle 101 has a cross-bolt safety, and the cross-bolt safety is placed in a non-firing position, the rifle 101 will not fire when the trigger 108 is pulled manually or actuated by the gun trigger actuator 130 of the present invention. Therefore, the rifle 101 can be cocked

repeatedly, safely emptying the magazine 22 without firing the rifle 101, even if the gun trigger actuator 130 is in the active firing mode.

[0053] Figure 12 shows an alternate embodiment 230 of the gun trigger actuator 130 installed on a lever action rifle 201, such as the prior art Winchester lever action rifle 1 of Figure 1 or other similar rifle. The gun trigger actuator 230 comprises each of the features of the gun trigger actuator 130 embodiment except that gun trigger actuator 230 has no trigger shim is installed in the receiver. Gun trigger actuator 230 has the fulcrum 150 pivotably secured by the pivot pin 180 to the trigger guard 112 portion of the rifle lever 110 at a point below and slightly forward of the trigger 108 as depicted in Figure 12 and a pivot pin 180 which secures the fulcrum 150 to the lever 110 and acts as a pivot point for the fulcrum 150. This alternate embodiment of the gun trigger actuator 230 functions and is similarly shaped and made in the same manner as the gun trigger actuator 130 depicted in the previous Figures 2-5, 10 and 11, except that a shim is not required to be placed in the receiver 6 (see also Figure 7). This gun trigger actuator 230 embodiment would be employed in cases where the trigger 108 has an acceptable lack of play; therefore no shim would be required. Figure 12 depicts the fulcrum 150 in the passive off position.

[0054] Figure 13 is a side view of an alternate version of a rifle lever 210 installed on a lever action rifle 301 and shows the rifle lever 210 employed with the gun trigger actuator 130 of the present invention, where the lever 210 has an enlarged finger hole 118 which is sized to accept the limb of an adult person.

[0055] Figure 14 is a side view of the rifle lever 210 installed on a lever action rifle 401 and shows the rifle lever 210 employed with the gun trigger actuator 230, where no shim is required

in the receiver 6 because the trigger 108 has an acceptable lack of play, and the lever 210 has an enlarged finger hole 118 which is sized to accept the limb of an adult person.

[0056] The foregoing detailed description is given primarily for clearness of understanding and no unnecessary limitations are to be understood therefrom for modifications can be made by those skilled in the art upon reading this disclosure and may be made without departing from the spirit of the invention and scope of the appended claims.